

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A processing element for a semiconductor manufacturing system, said processing element comprising:

a cylindrical unit including a passive polymeric component and an active component;

said cylindrical unit having a first radially-extending surface and a second radially extending surface opposite the first radially-extending surface, wherein an inside diameter of the cylindrical unit forms an opening for disposition of the cylindrical unit around disposed on a substrate holder and surrounding a substrate position in the semiconductor manufacturing system and the second radially extending surface is a substantially planar surface for disposition on a substrate holder in the semiconductor manufacturing system, and;

said passive polymeric component configured to erode when exposed to a plasma process in said semiconductor manufacturing system; and

[[an]] said active component included as a part of said passive component and configured to alter the chemistry of the processing when exposed to the plasma process.

Claim 2 (Withdrawn): The processing element as recited in claim 1, wherein said active component is embedded within said passive component.

Claim 3 (Original): The processing element as recited in claim 1, wherein said active component comprises at least one of a solid material and a liquid material.

Claim 4 (Withdrawn): The processing element as recited in claim 1, wherein said active component comprises an organo-metallic compound.

Claim 5 (Withdrawn): The processing element as recited in claim 4, wherein said organo-metallic compound comprises at least one of yttrium, aluminum, iron, titanium, zirconium, and hafnium.

Claim 6 (Withdrawn): The processing element as recited in claim 4, wherein said organo-metallic compound comprises at least one of yttrium tris hexafluoroacetylacetonate, yttrium tris(2,2,6,6-hexamethyl)-3,5-heptanedionate, yttrium tris diphenylacetylacetonate, 1,2-diferrocenylethane, aluminum tris(2,2,6,6-tetramethyl)-3,5-heptanedionate, aluminum lactate, aluminum-8-hydroxyquinoline, bis(cyclopentadienyl)titanium pentasulfide, bis(pentamethylcyclopentadienyl) hafnium dichloride, zirconium acetylacetonate, zirconium tetra(2,2,6,6-tetramethyl)-3,5-pentanedionate, zirconium tetra(1,5-diphenylpentane-2,4-dione), ferrocene aldehyde, ferrocene methanol, ferrocene ethanol, ferrocene carboxylic acid, ferrocene dicarboxylic acid, 1,2-diferrocene ethane, 1,3-diferrocene propane, 1,4-diferrocene butane and decamethylferrocene.

Claim 7 (Withdrawn): The processing element as recited in claim 1, wherein said active component comprises an ultraviolet (UV) absorber.

Claim 8 (Withdrawn): The processing element as recited in claim 7, wherein said UV absorber comprises at least one of benzophenone, benzotriazole, and hindered amine stabilizers (HALS).

Claim 9 (Withdrawn): The processing element as recited in claim 1, wherein said active component comprises an antioxidant.

Claim 10 (Withdrawn): The processing element as recited in claim 9, wherein said antioxidant comprises at least one of hindered phenols, aromatic amines, organophosphorous compounds, thiosynergists, hydroxylamine, lactones, and acrylated bis-phenols.

Claim 11 (Original): The processing element as recited in claim 1, wherein said active component comprises a distribution of solid particles encapsulated within said passive component.

Claim 12 (Withdrawn): The processing element as recited in claim 11, wherein said distribution of solid particles within said passive component comprises variations in at least one of a particle size, a particle composition, and a particle concentration.

Claim 13 (Withdrawn): The processing element as recited in claim 1, wherein said processing element is configured to be temperature controlled in order to alter a rate at which said active component is exposed to said plasma process.

Claim 14 (Withdrawn): The processing element as recited in claim 1, wherein said processing element is configured geometrically to affect a rate at which said active component is exposed to said plasma process.

Claim 15 (Withdrawn): The processing element as recited in claim 1, wherein said processing element is cylindrical, and an inner surface of said processing element comprises, a groove structure formed thereon and configured to expose a substantially constant surface area of said inner surface as said inner surface recedes during erosion by said plasma process.

Claim 16 (Withdrawn): The processing element as recited in claim 1, wherein said passive component comprises at least one of a polymer, a porous polymer, a foam, and a gel.

Claim 17 (Withdrawn): The processing element as recited in claim 16, wherein said polymer comprises at least one of Kapton and polyimide.

Claim 18 (Currently Amended): A semiconductor manufacturing system for processing a substrate using a plasma process, comprising:

a processing chamber configured to facilitate said plasma process;

a substrate holder coupled to said processing chamber and configured to support said substrate;

a gas distribution system coupled to said processing chamber and configured to introduce a process gas to said processing chamber;

a plasma source coupled to said processing chamber and configured to generate a plasma in said processing chamber;

at least one processing element coupled to at least one of said processing chamber, said substrate holder, said gas distribution system, and said plasma source; and

said at least one processing element comprising,

a cylindrical unit including a passive polymeric component and an active component,
said cylindrical unit having a first radially-extending surface and a second radially
extending surface opposite the first radially-extending surface, wherein an inside diameter of
the cylindrical unit forms an opening for disposition of the cylindrical unit around
~~on a substrate holder and surrounding~~ a substrate position in the semiconductor

manufacturing system and the second radially extending surface is a substantially planar surface for disposition on a substrate holder in the semiconductor manufacturing system, and
said passive polymeric component configured to erode when exposed to a plasma process in said semiconductor manufacturing system, and

[[an]] said active component included as a part of said passive component and configured to alter the chemistry of the processing when exposed to the plasma process

Claim 19 (Withdrawn): The semiconductor manufacturing system as recited in claim 18, wherein said active component is embedded within said passive component.

Claim 20 (Original): The semiconductor manufacturing system as recited in claim 18, wherein said active component comprises at least one of a solid material and a liquid material.

Claim 21 (Withdrawn): The semiconductor manufacturing system as recited in claim 18, wherein said active component comprises at least one of an organo-metallic compound, an ultraviolet absorber, and an antioxidant.

Claim 22 (Original): The semiconductor manufacturing system as recited in claim 18, wherein said active component comprises a distribution of solid particles encapsulated within said passive component.

Claim 23 (Withdrawn): The semiconductor manufacturing system as recited in claim 22, wherein said distribution of solid particles within said passive component comprises varieties in at least one of a particle size, a particle composition, and a particle concentration.

Claim 24 (Withdrawn): The semiconductor manufacturing system as recited in claim 18, wherein said processing element is configured to be temperature controlled in order to alter a rate at which said active component is exposed to said plasma process.

Claim 25 (Withdrawn): The semiconductor manufacturing system as recited in claim 18, wherein said at least one processing element is configured geometrically to affect a rate at which said active component is exposed to said plasma process.

Claim 26 (Withdrawn): The semiconductor manufacturing system as recited in claim 18, wherein said passive component comprises at least one of a polymer, a porous polymer, a foam, and a gel.

Claim 27 (Withdrawn): A method of utilizing a processing element to affect a chemical process in a semiconductor manufacturing system, comprising:

installing at least one processing element in said semiconductor manufacturing system, said at least one processing element comprising a passive component configured to be coupled to said semiconductor manufacturing system and an active component coupled to said passive component;

exposing said at least one processing element to said chemical process in order to facilitate erosion of said passive element; and

introducing said active component during said erosion of said passive component in order to alter the chemistry of said chemical process when exposed to said chemical process.

Claim 28 (Withdrawn): The method as recited in claim 27, further comprising:

monitoring said erosion of said passive component.

Claim 29 (Withdrawn): The method as recited in claim 28, wherein said monitoring is performed using at least one of measuring a light intensity emitted from said chemical process, measuring a thickness of said at least one processing element, and measuring a voltage in said semiconductor manufacturing.

Claim 30 (Withdrawn): The method as recited in claim 29, wherein said monitoring comprises measuring said light intensity using optical emission spectroscopy.

Claim 31 (Withdrawn): The method as recited in claim 29, wherein said monitoring comprises measuring said thickness using an ultrasonic sensor.

Claim 32 (Withdrawn): The method as recited in claim 29, wherein said monitoring comprises measuring said voltage using a voltage probe.

Claim 33 (Withdrawn): The method as recited in claim 27, further comprising:
controlling said introduction of said active component by performing at least one of varying a distribution of at least one of a size, composition, and a concentration of said active component in said passive component, varying the temperature of said passive component, and tailoring a geometry of said passive component.

Claim 34 (Withdrawn): The method as recited in claim 27, wherein said introducing said inactive component comprises introducing an embedded active component within said passive component.

Claim 35 (Withdrawn): The method as recited in claim 27, wherein said introducing said active component comprises introducing at least one of a solid material, and a liquid material.

Claim 36 (Withdrawn): The method as recited in claim 27, wherein said introducing said active component comprises introducing comprises at least one of an organo-metallic compound, an ultraviolet absorber, and an antioxidant.

Claim 37 (Withdrawn): The method as recited in claim 27, wherein said introducing said active component comprises introducing a distribution of solid particles encapsulated within said passive component.

Claim 38 (Withdrawn): The method as recited in claim 27, wherein said passive component comprising at least one of a polymer, a porous polymer, an exposing comprises eroding said foam, and a gel.

Claim 39 (Withdrawn): A processing element for affecting a chemical process in a semiconductor manufacturing system, comprising:

means for containing an active component within said semiconductor manufacturing system but initially isolated from said chemical process; and

means for releasing said active component from said means for containing after a period of exposure of said means for containing to said chemical process in said semiconductor manufacturing system; and

an active component coupled to said passive component and configured to alter said chemical process when exposed to said chemical process.

Claim 40 (Previously Presented): The processing element as recited in claim 1, wherein the passive polymeric component comprises a cylindrical ring.

Claim 41 (Previously Presented): The processing element as recited in claim 1, wherein the passive polymeric component comprises a surface exposed to the plasma process having a greater area than an opposite surface in contact with a substrate holder surface.

Claim 42 (Previously Presented): The semiconductor manufacturing system as recited in claim 18, wherein the passive polymeric component comprises a cylindrical ring.

Claim 43 (Previously Presented): The semiconductor manufacturing system as recited in claim 18, wherein the passive polymeric component comprises a surface exposed to the plasma process having a greater area than an opposite surface in contact with a substrate holder surface.